

WBS 3.0 C-0 Outfitting

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WBS 3.0

- Introduction
- Components of C-0 Outfitting
- Organization Chart
- Technical Description
- Project Planning and Management Overview
- ES&H

- WBS 3.0, provides the architectural, structural, mechanical and electrical finish-out work for the BTeV detector in the existing C-0 Building. This subproject also provides the modifications to the Main Ring C-0 Service Building and primary power for the Interaction Region (IR).
- Three major contracts are planned to accomplish this work
 - C-0 Occupancy Phase 1 – Completes the building shell to a minimally habitable building. OSHA and Life Safety requirements provided.
 - C-Sector High Voltage – Installs new 13.8KV feeder from KRS to C-0. Installs power for IR.
 - C-0 Occupancy Phase 2 – Installs the finishes, mechanical and electrical requirements of the BTeV detector.

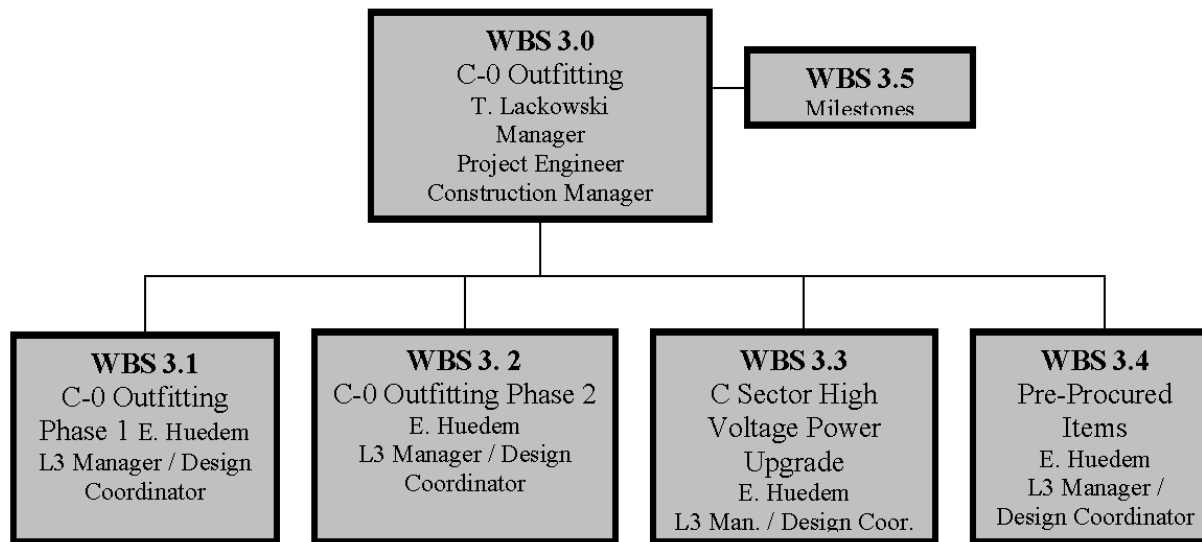
- C-0 Building
 - Architectural and structural finish out including:
 - Two Mezzanine floors
 - Stairs, elevator, partitions, toilet rooms.
 - Floor and wall finishes including raised computer floors.
 - Mechanical Systems
 - HVAC systems for Collision Hall, Assembly Hall, and Mezz..
 - Chilled water system.
 - High density computer room cooling.
 - Fire protection throughout the facility.
 - Electrical
 - Primary Power – 3 - 1500 KVA substations.
 - Three distribution subsystems; power supplies, quiet electronics, & house power.
 - 250 KVA Generator.

- IR Support
 - Primary Power; 1500 KVA transformer at C-0, 500 KVA transformers at B-4 and C-1.
 - 480 V secondary including panel boards.
 - Minor C-0 Service Building Architectural Modification.
 - Heated enclosure for outside bus between C-0 Service Building and penetrations leading to enclosure.

- Infrastructure
 - 13.8 KV feeder from Kautz Road Substation to C-0 Building.

Organization

Base cost \$5.9M (M+S: \$4.9M Labor: \$1.M)

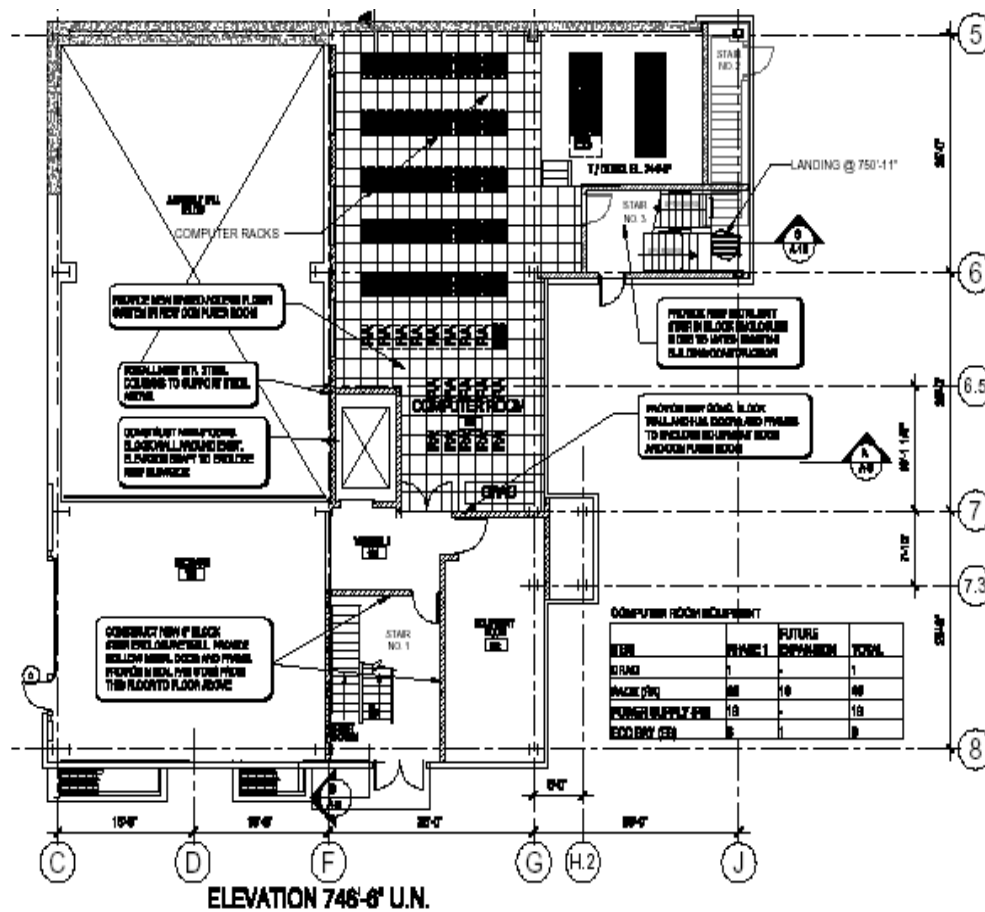


FESS Engineering		
CIVIL C. Federowicz	DDC CONTROLS L. Hammond	CONSTRUCTION MANAGEMENT OFFICE Manager – T. Lackowski Construction Coor. - TBD Procurement – R. Cypret Legal - TBD Environment – R. Walton Health & Safety - M. Heflin
ARCHITECTURAL G. Van Zandbergen	PROCESS PIPING SYSTEMS L. Hammond	
STRUCTURAL T. Lackowski	FIRE PROTECTION FIRE DETECTION J. Neihoff	
MECHAICAL SYSTEMS E. Huedum	ELECTRICAL Consultant Engineer	

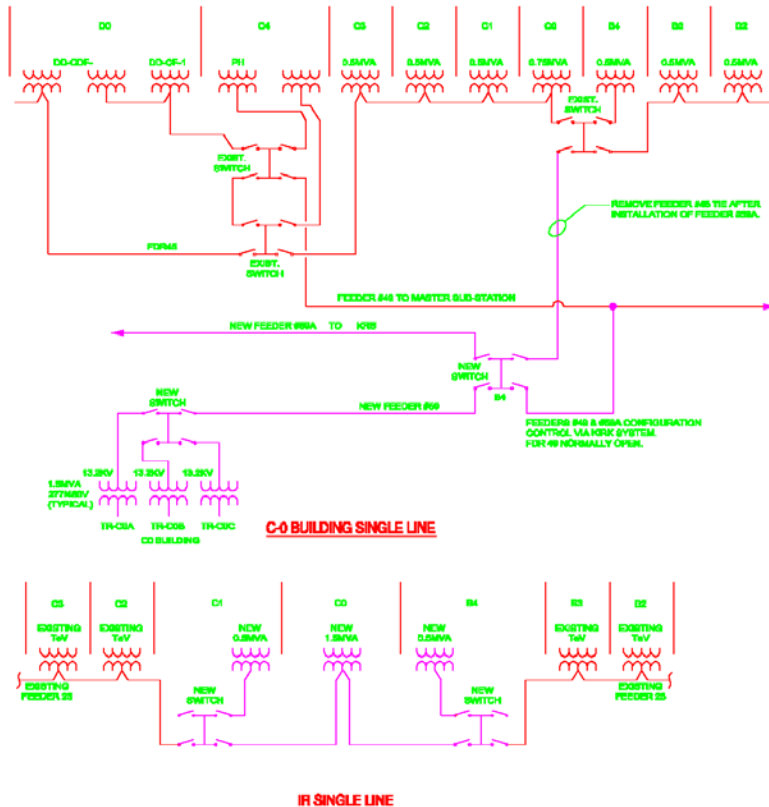


- In 1998 Fermilab constructed a Collision Hall and very basic building shell at the Main Ring C-0 Station.
- The project “C-0 Test Area” was constructed safely, on time, and within budget.
- UIP project stubbed in adequate ICW (Fire Protection water), Domestic Water, Sanitary Sewer, and natural gas.

C-0 Outfitting Phase I



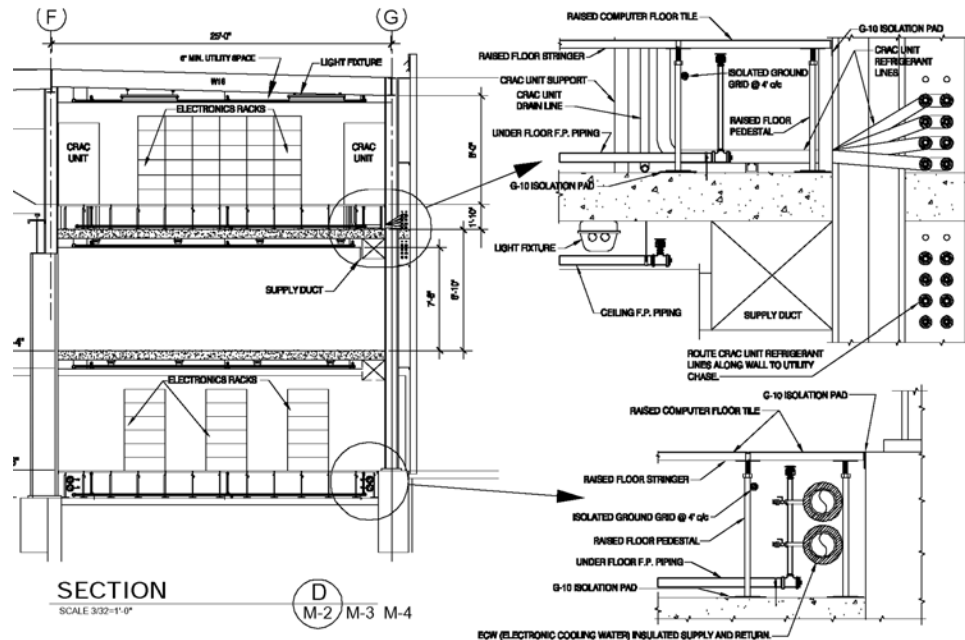
- The scope of Phase I is those items of work required to give Beneficial Occupancy of the Assembly Hall at El. 715 and the Receiving Area to allow magnet and torroid construction to begin.
- Installs the Mezzanine and concrete block partitions, stairs, elevator, toilet rooms, fire protection, fire detection and power to test analysis magnets.
- This work is requesting 3a approval. Beneficial Occupancy Ready by Mar. 22, 2006. Beneficial Occupancy need by: July 28, 2006



- Installs IR feeder connections to existing TeV feeder 23 at C-0, B-4 and C-1.
- Installs new feeder 59A from KRS to B-4 for C-0.

C-0 Outfitting Phase II

- Completes remainder of scope in and around C-0 Building.
- Installs HVAC, chilled water, high density computer room cooling, raised computer floors, finishes, remaining primary power, user and house power distribution.
- The delay in the start of this work will allow us to take advantage of the continuing development of high density cooling systems technology.



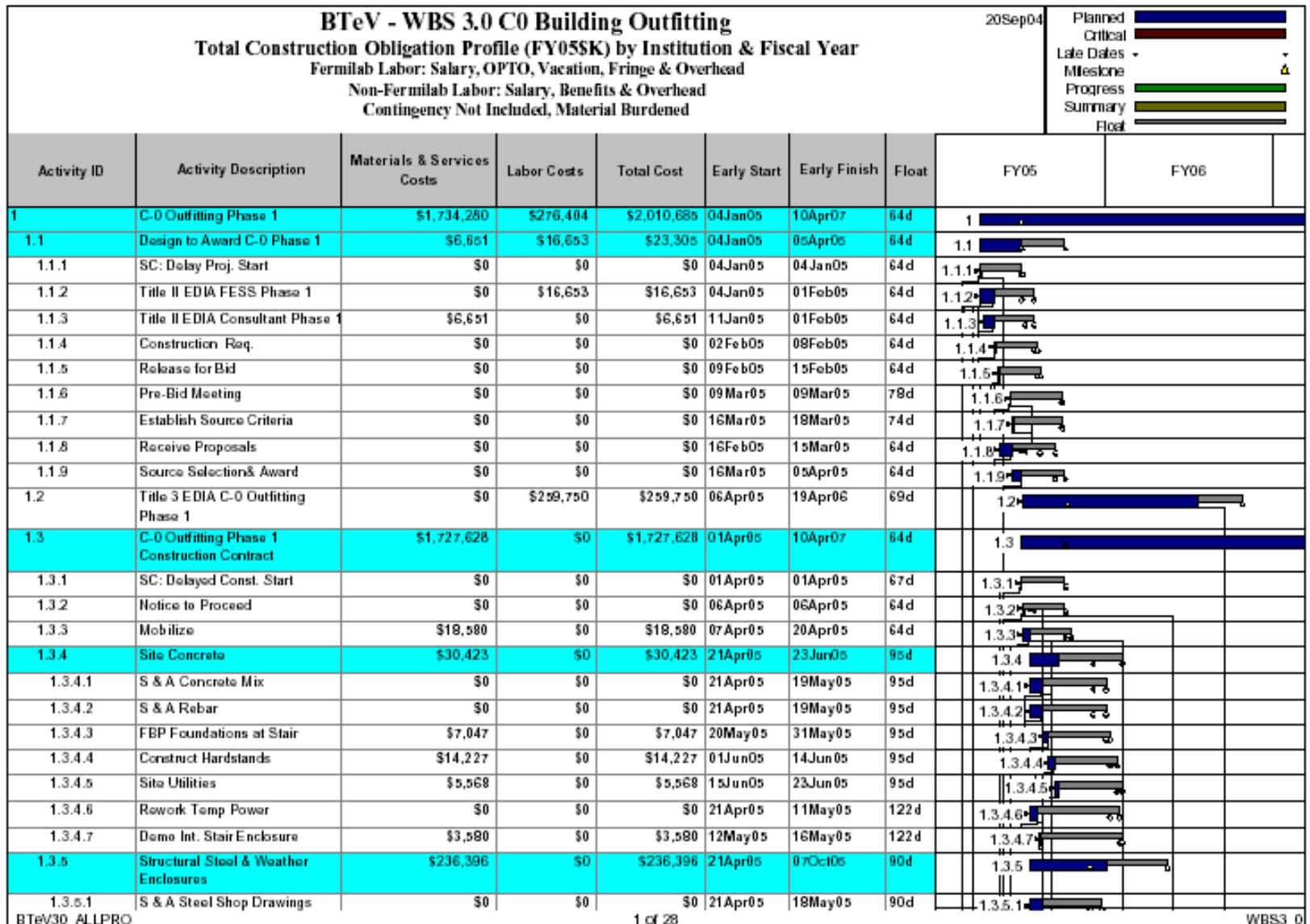
- Structural Steel – 22.7 tons
- Structural Concrete – 160 cubic yards
- Concrete Masonry – 8400 sf
- Chillers – 120 tons
- High Density Cooling - 120 tons
- Major HVAC systems - 2
- New Fire Protection coverage – 10,650 sf
- Installed Primary Power – 7 MVA
- 13.8 kv Feeder - 11,000 ft.
- 2000 amp switchboards – 4
- Electrical Distribution Panels – 22

Construction Cost

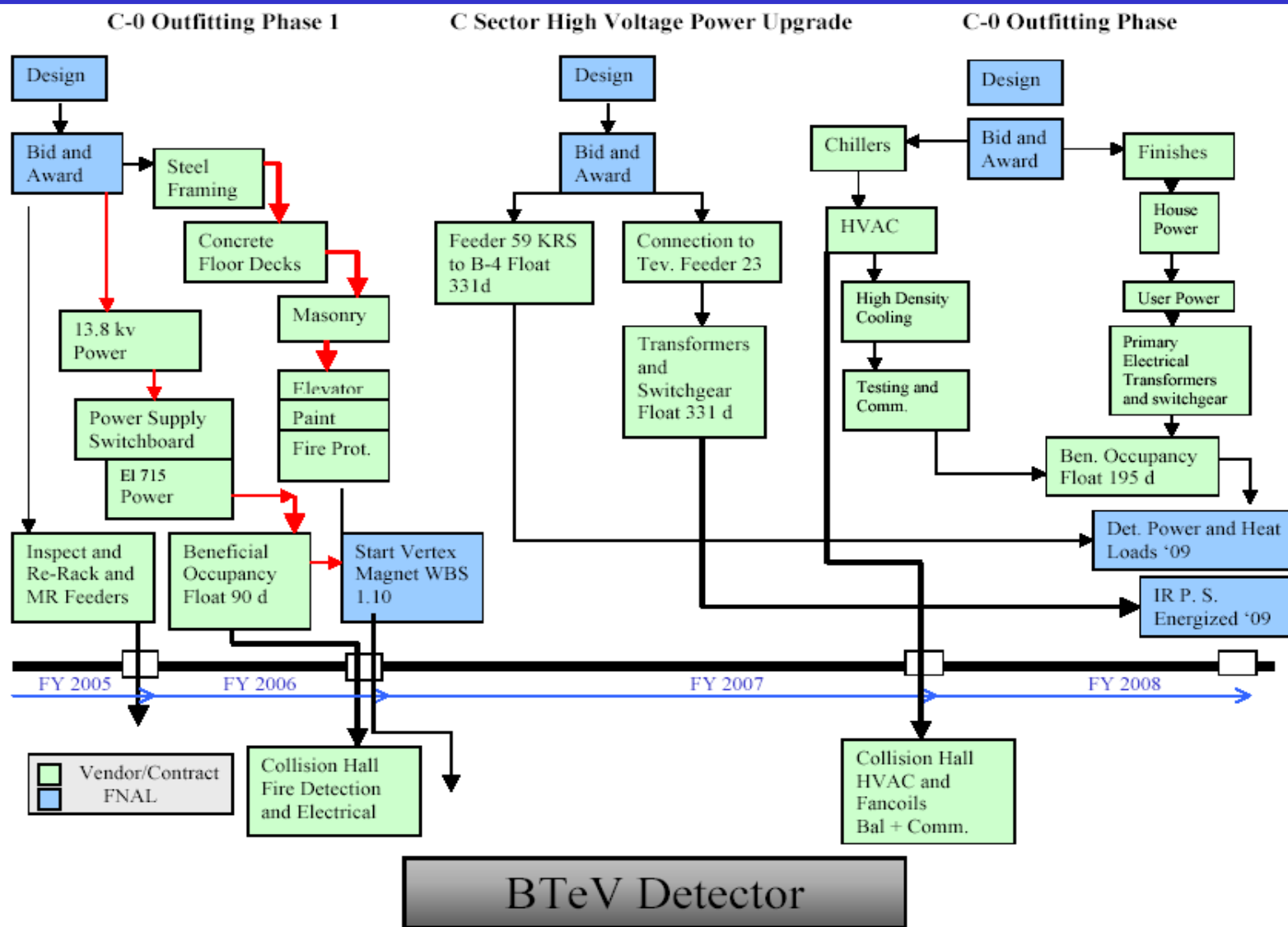
Activity ID	Activity Name	Material (\$)	Labor (\$)	Base Cost(\$)	Material Contingency (%)	Labor Contingency (%)	Total FY05	Total FY06	Total FY07	Total FY08	Total FY09	Total FY10	Total FY05-10
3.1	C-0 Outfitting Phase 1	1,734,280	276,405	2,010,685	20	20	1,126,651	1,281,727	4,519	0	0	0	2,412,896
3.2	C-0 Outfitting Phase 2	1,935,469	444,071	2,379,540	24	20	0	280,303	2,650,017	0	0	0	2,930,320
3.3	C Sector High Voltage Power Upgrade	599,249	175,471	774,720	20	20	0	837,933	91,731	0	0	0	929,664
3.4	Pre Procured Items	625,337	38,347	663,685	20	20	159,820	636,601	0	0	0	0	796,422
3.5	CDR ACDR & Project Reviews	0	57,985	57,985	0	0	57,985	0	0	0	0	0	57,985
3 file_30_092004		4,894,335	992,279	5,886,614	22	19	1,344,456	3,036,565	2,746,267	0	0	0	7,127,287

Labor Profile by Fiscal Year

Partial Gantt Chart



Description of Project Flow



Key Milestones

Performance Measurement Baseline

Activity		Early Start	Early Finish
ID	Activity Description		
7.1	T5M: MS-1 Start Engineering	2-Feb-05	2-Feb-05
7.2	T4M: MS-2 Start Construction	4-May-05	4-May-05
7.3	T5M: MS-3 Side Bay. Struct. Complete	17-Oct-05	17-Oct-05
7.4	T5M: MS-4 Temo Power Operational (Fdr 45)	22-Jun-06	22-Jun-06
7.5	T4M: MS-5 Beneficial occupancy of lower level and upper staging area	19-May-06	19-May-06
7.6	T5M: MS-6 Collision Hall Complete	30-Jul-07	30-Jul-07
7.7	T5M: MS-7 Mechanical Systems Complete (Except CH)	2-Oct-07	2-Oct-07
7.8	T5M: MS-8 Electrical Systems Complete	28-Jan-08	28-Jan-08
7.9	T4M: MS-9 Assembly, Service Building Construction Complete	28-Jan-08	28-Jan-08
7.1	T5M: MS-10 Engineering Complete	1-Apr-08	1-Apr-08

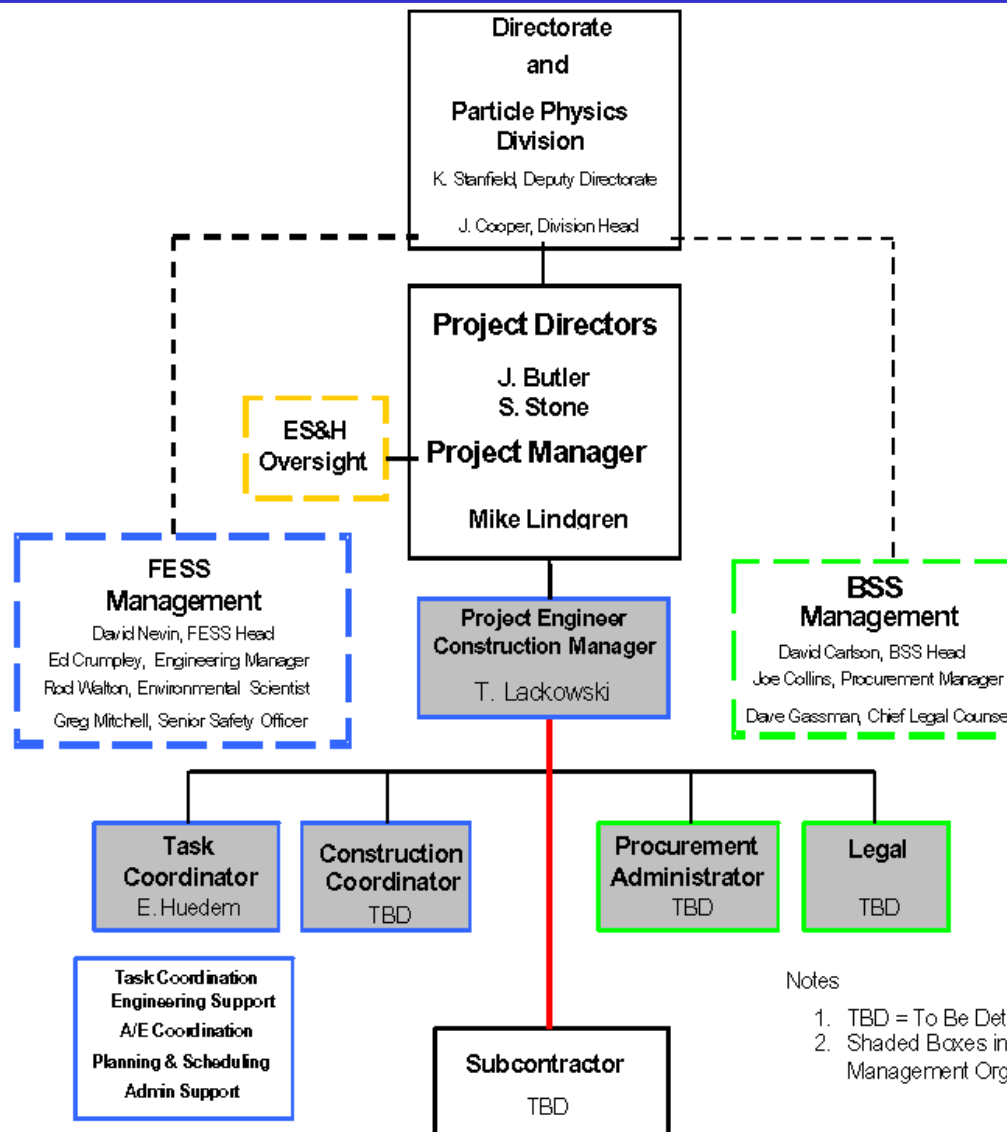
- C-0 Outfitting Phase 1
 - Float is 90 days. Float calculated targeting the Level 1 Milestone, **“Beneficial Occupancy of lower level and upper staging area”**. The completion of Phase 1 allows the start of the Vertex Magnet construction in C-0 .
- C Sector High Voltage Upgrade
 - Float is 331 days, completing in Oct. '06, float is calculated with respect to ‘Need by’ date, T2M25: C0 Outfitting Construction Complete.
- C-0 Outfitting Phase 2
 - Float is 195d, completing in July '07, float is calculated with respect to ‘Need by’ date, T2M25: C0 Outfitting Construction Complete.

- 1.) Define and document boundaries and interfaces with both Integration (1.10) and Interaction Region (2.0) in time for CD-2 Review.
 - Continued participation at Collaboration meetings, BTeV Technical Board meetings and the Project Management Group meetings provide a structured format for maintaining communications between subprojects.
 - Less formal meetings between the three subprojects provide for specific transfer of criteria. Criteria documented in the BTeV database.
 - MOU documenting the “Boundaries / Division of Responsibilities” and “Source of Requirements” is included in the Title 1 appendix.

- 2.) Involve key procurement personnel and approving official in advance to allow for rapid placement of the large Phase 1 procurement at project approval (CD-2).
 - Ongoing meetings between procurement, BTeV Project management, and WBS 2.0, WBS 3.0 subproject are held periodically to update status of long lead procurements.
 - Procurement has assembled a list of procurement activities specific for C-0 Outfitting Phase 1. This document is included in the Title 1 Appendix entitled “Recommended Milestones for Solicitation C0 Phase 1 Construction”
 - The importance of continued involvement and updating of the procurement group, while the design continues to develop, is recognized to achieve a prompt contract solicitation and award.

- Schedule
 - CD-2/3a approval date has a direct relation to the available float for C-0 Outfitting Phase 1.
- Technical
 - The methods of construction, materials and installation conditions are consistent with industry standards.
- Economic Factors
 - Fermilab is continuing to receive competitive proposals at or below the engineers estimate. Contingency on C-0 Outfitting Phase 2 has been raised to 26% for computer cooling and electrical and 22% for all other items.

Line Management



Notes

1. TBD = To Be Determined
2. Shaded Boxes indicate Construction Management Organization (CMO)

- The Construction Manager shall be the first line of contact with the Construction Subcontractor's organization.
- During construction the Subcontractors will use Project Hazard Analyzes (PHA) approach to plan the work and mitigate hazards.
- Goal is zero accidents.
- Project NEPA has been approved as a Categorical Exclusion (CX).

- Maybe I am too familiar with the terms I use, so I am drawing a blank here.

Description of Project Flow WBS 1.8 With Distributed Float

